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Lyman Leonard Hall

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BRINKS HOFER GILSON & LIONE/MARVELL

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/680,018	Applicant(s) HALL ET AL.	
	Examiner HILINA S. KASSA	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) | 5) ☐ Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

DETAILED ACTION

1. The amendment submitted on 04/08/2010 has been acknowledged. Claims 17-35 are pending.

Claim Objections

2. Claims 17, 23 and 30 are objected to because of the following informalities:

In claim 17, line 10, "the second bit rate being lower that the first bit rate" should be corrected to "the second bit rate being lower than the first bit rate" in order to correct typographical error. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 35 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 35, "the printing device does not include image processing" is a new matter since there is no explanation in the specification that a printer does not include image processing. According to the specification ¶ [0016],

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“Steps 150-180 are accomplished on the printing device. In step 150, data is transferred to and from the host machine. In step 160, if the data has been compressed, the data will be decompressed using the same algorithm that was used to compress the data. In step 170, the pulse codes are generated from the interim multi-bit values since it contains all necessary image detail and print engine control parameters. In step 180, the pulse codes are used to print a hardcopy image”. Thus, there is no description in the specification that “the printing device does not include image processing”.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 35, it is claimed that “the printing device does not include image processing”, it is not clear how the printer does process compressed image data because in ¶ [0016] of the specification, it is stated that the printer decompresses data that has been already compressed by the host machine. Thus, it is not clear if the printer does not absolutely process data i.e. including decompressing processes or if the printer processes compressed data that has already been rasterized and also generates pulse code for the decompressed data. Thus, clarification respectfully requested.

Response to Arguments

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7. Applicant's arguments filed on 04/08/2010 have been fully considered but they are not persuasive.

(1) argument 1:

Applicant argues that “none of the cited references reach or suggest examining the page data in groups of at least two adjacent pixels by use of a second application running on the host machine”.

With respect to Applicant’s argument “none of the cited references reach or suggest examining the page data in groups of at least two adjacent pixels by use of a second application running on the host machine”, Sano et al. disclosed **column 4, lines 50-55; note that the second software application is considered as the printer driver, the resolution converting process 132, of figure 6 i.e. in the printer driver is performed in accordance with image data of the adjacent pixels.** Thus, the argument is not persuasive.

(2) argument 2:

Applicant argues that “none of the cited references teach or suggest combining, by the host machine, the printer ready data with print engine commands operable to control a print engine”.

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With respect to Applicant's argument "none of the cited references teach or suggest combining, by the host machine, the printer ready data with print engine commands operable to control a print engine", Sano disclosed a print data processor in the host machine configured to render printer ready data based on the examination of the page data (**column 10, lines 25-29; note that print data PD1 for instructing drawing of the straight line L1 and print data PD2 for instructing drawing of the straight line L2 are produced. The generated print data PD1 and PD2 are transmitted to the PDL converting module 134**) and Roylance disclosed configured to combine the printer ready data with print engine control commands operable to control a print engine (**paragraph [0042], lines 6-13; note that the resolution enhancement procedure 122 of figure 1 takes control of the enhancement mode selection before the raster image is sent to the laser print engine i.e. the raster image also contains control information**). Such procedure is occurring in the processor and it would have been obvious to have the processor 20 of the host device in Sano to perform such procedure in order to enhance image processing techniques including resolution enhancement for improving the quality of text and line art, halftone image enhancement for improving the quality of gray value or halftone images and toner conservation for reducing toner consumption. Thus, the stated argument is not persuasive.

(3) argument 3:

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Applicant argues that “none of the cited references teach or suggest interim data having a second bit rate per plane per pixel, the second bit rate being lower than the first bit rate”.

With respect to Applicant’s argument “none of the cited references teach or suggest interim data having a second bit rate per plane per pixel, the second bit rate being lower than the first bit rate”, Roylance discloses configured to combine the printer ready data with print engine control commands operable to control a print engine to create interim data having a second bit rate per plane per pixel in **paragraph [0042], lines 6-13; note that the resolution enhancement procedure 122 of figure 1 takes control of the enhancement mode selection before the raster image is sent to the laser print engine i.e. the raster image also contains control information.** Also, Sano taught data having a second bit rate per plane per pixel, the second bit rate being lower than the first bit rate in **column 10, lines 30-35; note that the PDL converting module 134 generates and transmits PDL data PD' of "Band1" shown in the lower portion in FIG. 16 when the PDL converting module 134 processes the first band B1. The PDL converting module 134 generates PDL data PD' of "Band2" when the PDL converting module 134 processes the second band B2.** Thus, the stated argument is taught by the combination of the references.

(4) argument 4:

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Applicant argues that “none of the cited references teach or suggest transferring the interim data to a printing device”.

With respect to Applicant’s argument “none of the cited references teach or suggest transferring the interim data to a printing device” **column 10, lines 35-42; note that PDL data PD' is converted into raster data RD by the decomposer 140 so as to directly be developed in the band buffer 22. In synchronization with the operation of the output device raster data is transmitted to the outputting device for printing.** Thus, the stated argument is not persuasive.

8. Applicant's arguments with respect to claims 30-35 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 17-23, 26-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US Patent Number 7,103,833 B1), Hattori (US Patent

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Number 6,369,911 B1) and further in view of Roylance (US Publication Number 2002/0067509 A1).

(1) regarding claim 23:

As shown in figure 1-6, Sano et al. disclose a printing system including a host machine and a printing device (**1, 2, figure 1, column 3, lines 38-44; note that an image processing system which includes a host computer and output apparatus is disclosed**), the printing system comprising:

a first software application on the host machine configured to generate page data having a first bit rate per plane per pixel (**column 4, lines 31-38; note that the first software application is considered as the application that generates the print data for each page**);

a second software application on the host machine examining the page data in groups of at least two adjacent pixels (**column 4, lines 50-55; note that the second software application is considered as the printer driver, the resolution converting process 132, of figure 6 i.e. in the printer driver is performed in accordance with image data of the adjacent pixels as explained in column 9, lines 3-9**);

a print data processor in the host machine configured to render printer ready data based on the examination of the page data (**column 10, lines 25-29; note that print data PD1 for instructing drawing of the straight line L1 and print data PD2 for instructing drawing of the straight line L2 are produced. The generated print data PD1 and PD2 are transmitted to the PDL converting module 134**) and, the second

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bit rate being lower than the first bit rate (**column 10, lines 30-35; note that the PDL converting module 134 generates and transmits PDL data PD' of "Band1" shown in the lower portion in FIG. 16 when the PDL converting module 134 processes the first band B1. The PDL converting module 134 generates PDL data PD' of "Band2" when the PDL converting module 134 processes the second band B2**) and, a first communication device in the host machine configured to transfer the interim data (**column 10, lines 35-42; note that PDL data PD' is converted into raster data RD by the decomposer 140 so as to directly be developed in the band buffer 22. In synchronization with the operation of the output device raster data is transmitted to the outputting device for printing**).

Sano et al. disclose most of the subject matter as described as above except for specifically teaching a second communication device in the printing device configured to receive the interim data; a pulse code generator in the printing device configured to receive the interim data and configured to generate a pulse code corresponding to the interim data; and a print engine configured to receive the pulse code and transform the pulse code to a hardcopy image.

However, as shown in figure 1, Hattori discloses a second communication device in the printing device configured to receive the interim data (**column 3, lines 23-26; note that the main processor processes sequential printing commands supplied from the host computer to generate a bit-map type image data**); a pulse code generator in the printing device configured to receive the interim data and configured to generate a pulse code corresponding to the interim data (**column 3, lines 41-50; note**

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that the pulse generator receives the image data and generates the address data for the pixels); and a print engine configured to receive the pulse code and transform the pulse code to a hardcopy image (column 3, lines 56-60; note that after the pulse generator generates the pulse codes, it is transmitted to the print engine to be outputted).

Sano et al. and Hattori are combinable because they are from the same field of endeavor i.e. processing data for outputting device. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to have a second communication device in the printing device configured to receive the interim data; a pulse code generator in the printing device configured to receive the interim data and configured to generate a pulse code corresponding to the interim data; and a print engine configured to receive the pulse code and transform the pulse code to a hardcopy image. The suggestion/motivation for doing so would have been to enhance the resolution of an image so that the number of the gray scale levels, which can be expressed, is reduced in inverse proportion to the resolution of the image required to be printed (column 1, lines 14-22). Therefore, it would have been obvious to combine Sano et al. and Hattori to obtain the invention as specified in claim 23.

Sano et al. and Hattori disclose most of the subject matter as described as above except for specifically teaching configured to combine the printer ready data with print engine control commands operable to control a print engine to create interim data having a second bit rate per plane per pixel.

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However, Roylance discloses configured to combine the printer ready data with print engine control commands operable to control a print engine to create interim data having a second bit rate per plane per pixel (**paragraph [0042], lines 6-13; note that the resolution enhancement procedure 122 of figure 1 takes control of the enhancement mode selection before the raster image is sent to the laser print engine i.e. the raster image also contains control information**).

Sano et al., Hattori and Roylance are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to configured to combine the printer ready data with print engine control commands operable to control a print engine to create interim data having a second bit rate per plane per pixel. The suggestion/motivation for doing so would have been in order to enhance image processing techniques including resolution enhancement for improving the quality of text and line art, halftone image enhancement for improving the quality of gray value or halftone images and toner conservation for reducing toner consumption (paragraph [0022], lines 3-9). Therefore, it would have been obvious to combine Sano et al. and Hattori with Roylance to obtain the invention as specified in claim 23.

(2) regarding claim 26:

Sano et al. and Hattori disclose most of the subject matter as described as above except for specifically teaching wherein the print engine control commands are operable to control a print engine in toner miser mode.

However, Roylance discloses wherein the print engine control commands are operable to control a print engine in toner miser mode (**paragraph [0042], lines 20-26; note that the toner conservation procedure can reduce toner usage i.e. considered as toner miser mode**).

Sano et al. and Hattori and Roylance are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skilled in the art wherein the print engine control commands are operable to control a print engine in toner miser mode. The suggestion/motivation for doing so would have been in order to enhance image processing techniques including resolution enhancement for improving the quality of text and line art, halftone image enhancement for improving the quality of gray value or halftone images and toner conservation for reducing toner consumption (paragraph [0022], lines 3-9). Therefore, it would have been obvious to combine Sano et al. and Hattori with Roylance to obtain the invention as specified in claim 26.

(3) regarding claim 27:

Sano et al. and Hattori disclose most of the subject matter as described as above except for specifically teaching wherein the print engine control commands are operable to control the print engine to perform toner explosion correction.

However, Roylance discloses wherein the print engine control commands are operable to control the print engine to perform toner explosion correction (**paragraph [0007], lines 14-18 and [0008], 1-8; note that the toner that is adhered to the discharged areas is then transferred to the media and fixed in a conventionally known manner**).

Sano et al. and Hattori and Roylance are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skilled in the art wherein the print engine control commands are operable to control the print engine to perform toner explosion correction. The suggestion/motivation for doing so would have been in order to enhance image processing techniques including resolution enhancement for improving the quality of text and line art, halftone image enhancement for improving the quality of gray value or halftone images and toner conservation for reducing toner consumption (paragraph [0022], lines 3-9). Therefore, it would have been obvious to combine Sano et al. and Hattori with Roylance to obtain the invention as specified in claim 27.

(4) regarding claim 28:

Sano et al. and Hattori disclose most of the subject matter as described as above except for specifically teaching wherein the print engine control commands are operable to control the print engine to reduce edges.

However, Roylance discloses wherein the print engine control commands are operable to control the print engine to reduce edges (**paragraph [0009], lines 1-6; note that these enhancement techniques include: edge smoothing, fine line broadening, anti-aliasing (to smooth jagged edges), and increasing resolution**).

Sano et al. and Hattori and Roylance are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skilled in the art wherein the print engine control commands are operable to control the print engine to reduce edges. The suggestion/motivation for doing so would have been in order to enhance image processing techniques including resolution enhancement for improving the quality of text and line art, halftone image enhancement for improving the quality of gray value or halftone images and toner conservation for reducing toner consumption (paragraph [0022], lines 3-9). Therefore, it would have been obvious to combine Gibson and Hattori with Roylance to obtain the invention as specified in claim 28.

(5) regarding claim 29:

Sano et al. and Hattori disclose most of the subject matter as described as above except for specifically teaching wherein the interim data contains all information

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necessary for the printing device to produce the hardcopy image with the same detail contained in the page data.

However, Roylance discloses wherein the interim data contains all information necessary for the printing device to produce the hardcopy image with the same detail contained in the page data **(paragraph [0023], lines 9-14; note the regions in the complex bitmap image suitable for processing by one or more of the plurality of image enhancement procedures, selectively applying one or more of the plurality of image enhancement procedures to the identified regions to enhance a raster image of the complex bitmap image, and printing the enhanced raster image).**

Sano et al., Hattori and Roylance are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to wherein the interim data contains all information necessary for the printing device to produce the hardcopy image with the same detail contained in the page data. The suggestion/motivation for doing so would have been in order to enhance image processing techniques including resolution enhancement for improving the quality of text and line art, halftone image enhancement for improving the quality of gray value or halftone images and toner conservation for reducing toner consumption (paragraph [0022], lines 3-9). Therefore, it would have been obvious to combine Sano et al. and Hattori with Roylance to obtain the invention as specified in claim 29.

(6) regarding claim 31:

Sano et al. and Hattori disclose most of the subject matter as described as above except for specifically teaching wherein the print engine control commands in the host machine control one or more print enhancement selected from the group consisting of toner miser mode, toner explosion correction, and edge reduction.

However, Roylance discloses wherein the print engine control commands in the host machine control one or more print enhancement selected from the group consisting of toner miser mode, toner explosion correction, and edge reduction (**paragraph [0007], lines 14-18 and [0008], 1-8; note that the toner that is adhered to the discharged areas is then transferred to the media and fixed in a conventionally known manner**).

Sano et al. and Hattori and Roylance are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skilled in the art wherein the print engine control commands in the host machine control one or more print enhancement selected from the group consisting of toner miser mode, toner explosion correction, and edge reduction. The suggestion/motivation for doing so would have been in order to enhance image processing techniques including resolution enhancement for improving the quality of text and line art, halftone image enhancement for improving the quality of gray value or halftone images and toner conservation for reducing toner consumption (paragraph [0022], lines 3-9). Therefore, it would have been obvious to combine Sano et al. and Hattori with Roylance to obtain the invention as specified in claim 31.

11. The proposed combination of Sano et al., Hattori and Roylance, explained in the rejection of system claims 23 and 26-29, renders obvious the steps of the method of claims 17-22 because these steps occur in the operation of the proposed combination as discussed above. Thus, the arguments similar to that presented above for claims 23 and 26-29 are equally applicable to claims 17-22.

12. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US Patent Number 7,103,833 B1), Hattori (US Patent Number 6,369,911 B1), Roylance (US Publication Number 2002/0067509 A1) and further in view of Chamzas et al. (US Patent Number 5,031,053).

(1) regarding claim 24:

Sano et al., Hattori and Roylance disclosed most of the subject matter as described as above except for specifically teaching wherein the print data processor utilizes a lookup table to generate the interim data.

However, Chamzas et al. disclosed wherein the print data processor utilizes a lookup table to generate the interim data (**figure 5, column 7, lines 20-25, note that a table depicting a so-called group pixel assignment and super pixel assignment is disclosed**).

Sano et al., Hattori, Roylance and Chamzas et al. are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to wherein the print data processor utilizes a lookup table to generate the interim data. The suggestion/motivation for doing so would have been in order to efficiently transmit and encode/decode image column 1, lines 13-15. Therefore, it would have been obvious to combine Sano et al. and Hattori with Roylance to obtain the invention as specified in claim 24.

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US Patent Number 7,103,833 B1), Hattori (US Patent Number 6,369,911 B1) and Roylance (US Publication Number 2002/0067509 A1) further in view of Gibson (US Patent Number 5,828,361).

(1) regarding claim 25:

Sano et al. and Hattori with Roylance disclose all of the subject matter as described as above except for specifically teaching wherein the host machine is a personal computer configured to display the page data having the first bit rate.

However, Gibson disclose wherein the host machine is a personal computer configured to display the page data having the first bit rate (**column 4, line 61-column 5, line 7; note that the generated single bit per pixel raster data structure is displayed in the display**).

Sano et al., Hattori, Roylance and Gibson are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to wherein the host machine is a personal computer configured to display the page data having the first bit rate. The suggestion/motivation for doing so would have been in order to enhance image processing techniques including rapid transmission of multicolor or gray scale display data (abstract, lines 1-3). Therefore, it would have been obvious to combine Sano et al. and Hattori with Roylance to obtain the invention as specified in claim 25.

14. Claims 30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US Patent Number 7,103,833 B1) in view of Roylance (US Publication Number 2002/0067509 A1).

(1) regarding claim 30:

Sano et al. disclose a printing method using a host machine utilizing at least one processor, and a printing device (**1, 2, figure 1, column 3, lines 38-44;; note that an image processing system which includes a host computer and output apparatus is disclosed**), the printing method comprising:

generating page data having a first bit rate per plane per pixel from a first application running on a host machine utilizing the at least one processor (**column 4,**

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lines 31-38; note that the first software application is considered as the application that generates the print data for each page);

examining the page data in groups of at least two adjacent pixels by use of a second application running on the host machine utilizing the at least one processor **(column 4, lines 50-55; note that the second software application is considered as the printer driver, the resolution converting process 132, of figure 6 i.e. in the printer driver is performed in accordance with image data of the adjacent pixels);**

rendering, by the host machine utilizing the at least one processor, printer ready data based on the examination of the page data **(column 10, lines 25-29; note that print data PD1 for instructing drawing of the straight line L1 and print data PD2 for instructing drawing of the straight line L2 are produced. The generated print data PD1 and PD2 are transmitted to the PDL converting module 134);** the second bit rate being lower than the first bit rate **(column 10, lines 30-35; note that the PDL converting module 134 generates and transmits PDL data PD' of "Band1" shown in the lower portion in FIG. 16 when the PDL converting module 134 processes the first band B1. The PDL converting module 134 generates PDL data PD' of "Band2" when the PDL converting module 134 processes the second band B2);**

compressing, using a compression algorithm, the interim data in the host machine utilizing the at least one processor **(column 6, lines 24-25; note that the image data is compressed);** and

transferring the compressed interim data to a printing device (**column 6, lines 38-41; note that the raster data is transmitted to the outputting device for printing**).

Sano et al. disclosed most of the subject matter as described as above except for specifically teaching combining, by the host machine utilizing the at least one processor, the printer ready data with print engine control commands operable to control a print engine to create interim data having a second bit rate per plane per pixel.

However, Roylance discloses combining, by the host machine utilizing the at least one processor, the printer ready data with print engine control commands operable to control a print engine to create interim data having a second bit rate per plane per pixel (**paragraph [0042], lines 6-13; note that the resolution enhancement procedure 122 of figure 1 takes control of the enhancement mode selection before the raster image is sent to the laser print engine i.e. the raster image also contains control information**).

Sano et al. and Roylance are combinable because they are from the same field of endeavor i.e. Multi-level image reproduction (e.g., gray level reproduction). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to configured combining, by the host machine utilizing the at least one processor, the printer ready data with print engine control commands operable to control a print engine to create interim data having a second bit rate per plane per pixel. The suggestion/motivation for doing so would have been in order to enhance image processing techniques including resolution enhancement for improving the quality of

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text and line art, halftone image enhancement for improving the quality of gray value or halftone images and toner conservation for reducing toner consumption (paragraph [0022], lines 3-9). Therefore, it would have been obvious to combine Sano et al. with Roylance to obtain the invention as specified in claim 30.

(2) regarding claim 35:

Sano et al. further disclosed the printing method of claim 30, wherein the printing device does not include image processing (**column 6, lines 38-41**).

15. Claim 32-34 rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US Patent Number 7,103,833 B1), Roylance (US Publication Number 2002/0067509 A1), Hattori (US Patent Number 6,369,911 B1) and further in view of Vondran, Jr. et al. (US Patent Number 5,915,079).

(1) regarding claim 32:

Sano et al. and Roylance disclosed all of the subject matter as described as above except for specifically teaching decompressing the compressed interim data in the printing device; generating, within the printing device, pulse codes from the decompressed interim data; and rendering a hardcopy image from the pulse codes.

However, Hattori disclosed generating, within the printing device, pulse codes from the decompressed interim data (**column 3, lines 41-50; note that the pulse**

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generator receives the image data and generates the address data for the pixels); and rendering a hardcopy image from the pulse codes (**column 3, lines 56-60; note that after the pulse generator generates the pulse codes, it is transmitted to the print engine to be outputted**).

Sano et al., Roylance and Hattori are combinable because they are from the same field of endeavor i.e. processing data for outputting device. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to generate, within the printing device, pulse codes from the decompressed interim data; and rendering a hardcopy image from the pulse codes. The suggestion/motivation for doing so would have been to enhance the resolution of an image so that the number of the gray scale levels, which can be expressed, is reduced in inverse proportion to the resolution of the image required to be printed (column 1, lines 14-22). Therefore, it would have been obvious to combine Sano et al., Roylance and Hattori to obtain the invention as specified in claim 32.

Also, Vondran disclosed decompressing the compressed interim data in the printing device (**column 14, lines 54-57; note that after decompression the merge plane and the halftone plane are extracted from the stream of decompressed lossless print data**).

Sano et al., Roylance, Hattori and Vondran are combinable because they are from the same field of endeavor i.e. processing data for outputting device. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to decompress the compressed interim data in the printing device. The

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suggestion/motivation for doing so would have been to in order to perform a multitude of permutations of print data processing operations optimized for the print data (Abstract, lines 28-32). Therefore, it would have been obvious to combine Sano et al., Roylance, Hattori and Vondran to obtain the invention as specified in claim 32.

(2) regarding claim 33:

Sano et al., Hattori and Roylance disclosed all of the subject matter as described as above except for specifically teach wherein the compression algorithm comprises JBIG.

However, Vondran disclosed wherein the compression algorithm comprises JBIG **(column 14, lines 40-41; note that the lossless compressed/JBIG raster print data is expressed in a RGB color space).**

Sano et al., Roylance, Hattori and Vondran are combinable because they are from the same field of endeavor i.e. processing data for outputting device. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to have the compression algorithm comprises JBIG. The suggestion/motivation for doing so would have been to in order to perform a multitude of permutations of print data processing operations optimized for the print data (Abstract, lines 28-32). Therefore, it would have been obvious to combine Sano et al., Roylance, Hattori and Vondran to obtain the invention as specified in claim 33.

(3) regarding claim 34:

Sano et al., Hattori and Roylance disclosed all of the subject matter as described as above except for specifically teach wherein the compression algorithm comprises JPEG.

However, Vondran disclosed wherein the compression algorithm comprises JPEG (column 14, lines 38-40; note that the lossy compressed/JPEG raster print data is expressed in a YCbCr color space).

Sano et al., Roylance, Hattori and Vondran are combinable because they are from the same field of endeavor i.e. processing data for outputting device. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to wherein the compression algorithm comprises JPEG. The suggestion/motivation for doing so would have been to in order to perform a multitude of permutations of print data processing operations optimized for the print data (Abstract, lines 28-32). Therefore, it would have been obvious to combine Sano et al., Roylance, Hattori and Vondran to obtain the invention as specified in claim 34.

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

/Hilina S Kassa/

Examiner, Art Unit 2625

July 13, 2010

/David K Moore/

Supervisory Patent Examiner, Art Unit 2625